AMENDMENTS TO THE CLAIMS

Please **CANCEL** claim 21 without prejudice or disclaimer.

Please **AMEND** claims 1, 9, 10, and 17 as shown below.

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A control system for supplying a fuel to a fuel cell stack that includes an anode and a cathode and generates electrical energy by a chemical reaction of the fuel, comprising:

a fuel storage unit that stores the fuel to be supplied to the fuel cell stack;

a diluent storage unit that stores only a diluent that is a byproduct of the chemical reaction in the fuel cell stack;

a sensor that detects a concentration of a fuel in a fuel mixture solution and outputs a signal according to the concentration; and

a control unit that receives the signal from the sensor and controls the fuel mixture solution,

wherein the diluent comprises H_20 and wherein the sensor comprises a sensor film ~~or a sensor member~~ that changes volume thereof depending on the concentration of the fuel, and

wherein the signal is determined based on a variable input consisting of the concentration of the fuel and the volume of the sensor film.

2. (Canceled)

3. (Original) The control system of claim 1, further comprising:

a fuel mixing unit that mixes the fuel supplied from the fuel storage unit and the diluent supplied from the diluent storage unit.

4. (Original) The control system of claim 3, wherein the sensor is located in the fuel mixing unit.

5. (Canceled)

6. (Original) The control system of claim 1, further comprising:

a line between the fuel storage unit and the diluent storage unit,

wherein the line supplies the fuel mixture.

7. (Original) The control system of claim 6, wherein the sensor is located in the line.

8. (Canceled)

9. (Currently Amended) The control system of claim 1, wherein the sensor comprises:

a substrate; and

the sensor film attached to a surface of the substrate~~,~~

~~wherein the sensor film changes volume thereof depending on the concentration of the fuel in the fuel mixture solution~~.

10. (Currently Amended) ~~The control system of claim 1,~~ A control system for supplying a fuel to a fuel cell stack that includes an anode and a cathode and generates electrical energy by a chemical reaction of the fuel, comprising:

a fuel storage unit that stores the fuel to be supplied to the fuel cell stack;

a diluent storage unit that stores only a diluent that is a byproduct of the chemical reaction in the fuel cell stack;

a sensor that detects a concentration of a fuel in a fuel mixture solution and outputs a signal according to the concentration; and

a control unit that receives the signal from the sensor and controls the fuel mixture solution,

wherein the diluent is H_2O, and

wherein the sensor comprises:

an external electrode;

an internal electrode; and

[[the]] a sensor member that fills the space between the internal electrode and the external electrode,

wherein the sensor member changes volume thereof depending on the concentration of the fuel mixture solution.

11. (Original) The control system of claim 9, wherein the sensor is manufactured using polymeric ion exchange membrane or resin.

12. (Original) The control system of claim 10, wherein the sensor is manufactured using polymeric ion exchange membrane or resin.

13. (Previously Presented) The control system of claim 9, wherein the sensor comprises an electronic circuit that outputs an electrical signal depending on a change in the volume of the sensor film.

14. (Previously Presented) The control system of claim 10, wherein the sensor comprises an electronic circuit that outputs an electrical signal depending on a change in the volume of the sensor member.

15. (Previously Presented) The control system of claim 11, wherein the polymeric ion exchange membrane or resin is one of polystyrene sulfonic acid, poly ether ether sulfone sulfonic acid, perfluorinated sulfonic acid polymer, polyimide sulfonic acid, sulfonated polyolefin and sulfonated polysulfane.

16. (Previously Presented) The control system of claim 12, wherein the polymeric ion exchange membrane or resin is one of polystyreme sulfonic acid, poly ether ether sulfone sulfonic acid, perfluorinated sulfonic acid polymer, polyimide sulfonic acid, sulfonated polyolefin and sulfonated polysulfane.

17. (Currently Amended) A sensor for a fuel concentration in a fuel cell, comprising:

a substrate; and

a sensor film on the substrate,

wherein the sensor film changes volume thereof depending on a concentration of fuel in fuel mixture, ~~and~~

wherein ~~a signal is output~~ the sensor outputs an electrical signal when an expansion coefficient of the sensor film is not within a reference range of expansion coefficients of the sensor film, and

wherein the electrical signal is determined based on a variable input consisting of the concentration of the fuel and the volume of the sensor film.

18. (Original) The sensor of claim 17, wherein the sensor film is made of polymeric ion exchange membrane or resin.

19. (Previously Presented) The sensor of claim 17, wherein the polymeric ion exchange membrane or resin is one of polystyrene sulfonic acid, poly ether ether sulfone sulfonic acid, sulfonated polyolefin and sulfonated polysulfone.

20. (Previously Presented) A sensor for a fuel concentration in a fuel cell comprising:

an external electrode;

an internal electrode; and

a sensor member that fills the space between the internal electrode and the external electrode,

wherein the sensor member changes volume thereof depending on a concentration of fuel in fuel mixture, and

wherein a signal is output when an expansion coefficient of the sensor is not within a reference range.

21. (Canceled)

22. (Previously Presented) The control system of claim 9, wherein the signal is output when an expansion coefficient of the sensor film is not within a reference range of expansion coefficients of the sensor film.

23. (Previously Presented) The control system of claim 10, wherein the signal is output when an expansion coefficient of the sensor member is not within a reference range of expansion coefficients of the sensor member.